Multiplication Property of Radkals

$\sqrt[n]{ab}$

Simplified form of a Radical

1. Radicand has no factor raised to a power greater then or equal to the index.
2. Radicand doesn't contain a fraction
3. No radicals in the denominator of the fraction.

e.g. Radicals not in simplified form

$\sqrt[3]{x^4}$ ←

$\sqrt[7]{x^7}$ ←

$\sqrt[n]{x^{10}}$ ←

$\sqrt{\frac{1}{4}} \leftarrow$

$\frac{1}{\sqrt{2}} \leftarrow$

Simplify the following

$\sqrt{x^2} =$

$\sqrt{x^4} =$

$\sqrt{x^6} =$

$\sqrt{x^{100}} =$

$\sqrt{x^{28}}$

$\sqrt[3]{x^6} =$ $\qquad\qquad$ $\sqrt[4]{x^{16}}$ $\qquad$ x^4

$\sqrt[3]{x^9} =$

$\sqrt{x^9} =$

$\sqrt[3]{p^{17} q^{10}} =$

$\sqrt[3]{40x^3y^5z^7} =$

When simplifying radicals

1. Use prime factorization of a constant

2. Create two radicals and group powers

   - in one radical largest powers divisible by index

   - second radical powers smaller than index

3. Simplify first radical, bring second radical

From module.

$$\sqrt{\frac{3x^4y^5}{300xy^3}}$$

$$5t\sqrt[3]{75r^8st^6}$$

Addition + Subtraction of Radicals

$6\sqrt{11} + 2\sqrt{11} =$

$3\sqrt{x} - 7\sqrt{x} =$

$\sqrt{3ab} + \sqrt{3ab} =$

$-2\sqrt[3]{ab} + 7\sqrt[3]{ab} - \sqrt[3]{ab} =$

$5\sqrt[3]{xy} - 3\sqrt[3]{xy} + \sqrt{xy} =$

$3\sqrt{8} + \sqrt{2}$

$8\sqrt{x^3y^2} - 3y\sqrt{x^3}$

Multiplication of Radicals

$(3\sqrt{2})(5\sqrt{6})$

$(3\sqrt{2})(5\sqrt[3]{6}) =$

$(2\sqrt[3]{4ab})(5\sqrt[3]{2a^2b}) =$

$$(\sqrt{5}+3\sqrt{2})(2\sqrt{5}-\sqrt{2})$$

$$(2\sqrt{x}+\sqrt{y})(6-\sqrt{x}+8\sqrt{y}) =$$

$(\sqrt{d} + 3)^2$

$(5\sqrt{y} - \sqrt{2})^2 =$

$(\sqrt{3} + 2)(\sqrt{3} - 2) =$